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10/542,884	07/20/2005	Gregory P. Carman	58086-223840	8378

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EXAMINER	
FERGUSON, MICHAEL P	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/542,884	CARMAN ET AL.	
	Examiner	Art Unit	
	MICHAEL P. FERGUSON	3679	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 September 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *20 July 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 1-19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 (lines 16-18) recites "an engagement mechanism that provides reversible contact of said indenter surface with said engagement surface and provides for the application of sufficient stress to said engagement surface to provide reversible conversion". It is unclear as to what structural elements constitute an engagement mechanism. It is unclear as to what constitutes reversible contact or what causes such reversal.

Claim 1 (lines 24-27) recites "wherein a load is transferred between said first and second bodies... to cause a change of motion of at least one of said first and second bodies relative to each other". It is unclear as to what constitutes a change of motion of the first or second body or how a load causes such change of motion. Claims 2-9 depend from claim 1 and are likewise rejected.

Claim 10 (lines 17-21) recites "providing an engagement mechanism for contacting said indenter surface with said engagement surface to apply sufficient stress to said engagement surface to convert at least a portion of said pseudo-elastic material from said austenite state to said martensite state due to a stress-induced martensite -

austenite transition". It is unclear as to what structural elements constitute an engagement mechanism. It is unclear as to what causes such conversion or whether such conversion is a separate process from the stress-induced martensite-austenite transition.

Claim 10 (lines 26-29) recites "wherein a load is transferred between said first and second bodies... to cause a change of motion of at least one of said first and second bodies relative to each other". It is unclear as to what constitutes a change of motion of the first or second body or how a load causes such change of motion. Claims 11-19 depend from claim 10 and are likewise rejected.

3. Claims 1-19 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01. The omitted structural cooperative relationships which render the claims indefinite are as follows:

Claims 1 and 10 fail to positively recite the structural cooperative relationship between the engagement mechanism, the first body, and the second body. It is unclear as to how the engagement mechanism structurally relates to and interacts with each of the first and second bodies in order to provide reversible contact and in order to provide sufficient stress to the engagement surface to provide reversible conversion. It is unclear as to how such contact relates to such conversion. It is unclear as to how the engagement mechanism engages the first and second bodies to covert from the austenite state to the martensite state, or how the engagement mechanism and the first

and the second bodies structurally interact and engage in each of the austenite and martensite states. Claims 2-9 and 11-19 depend from claims 1 and 10, respectively, and are likewise rejected.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-11, 14-19 are rejected under 35 U.S.C. 102(b) as being anticipated by Julien et al. (US 5,226,683).

As to claim 1, Julien et al. disclose a system for releasable engagement of two bodies, the system comprising:

a first body **104** comprising an engagement surface, the engagement surface comprising a pseudo-elastic material, the pseudo-elastic material being at an operating temperature, the operating temperature being above the martensite-austenite transition temperature for the pseudo-elastic material, the pseudo-elastic material being capable of conversion from an austenite state to a martensite state by application of stress to the first body at the engagement surface, the application of stress to the engagement surface thereby converting the first body from an unloaded body to a loaded body wherein the engagement surface of the unloaded body that is in the austenite state has an unstressed shape and the engagement surface of the loaded body that is in the

martensite state has a stressed shape wherein the stressed shape is different from the unstressed shape;

a second body **100,102** comprising an indenter surface for contacting the engagement surface of the first body, the indenter surface being formed by one or more teeth that extend from the second body for engagement with the first body to provide the stress to change the engagement surface of pseudo-elastic material from the austenite state to the martensite state (teeth are constituted by irregularities in the surface finishes of housing **100** and shaft **102**; Figure 2, column 6 lines 28-34), the second body comprising a material that is harder than the pseudo-elastic material in the martensite state; and

an engagement mechanism (an engagement mechanism is constituted by axial relative movement between shaft **102** and housing **100**; Figure 10A, column 6 lines 15-34) that provides reversible contact of the indenter surface with the engagement surface and provides for the application of sufficient stress to the engagement surface to provide reversible conversion at least a portion of the pseudo-elastic material from the austenite state to the martensite state due to a stress-induced martensite transition while the operating temperature remains above the martensite-austenite transition temperature;

wherein a load is transferred between the first and second bodies while in operation through contact of the indenter surface of the second body with the engagement surface of the first body to cause a change of motion of at least one of the first and second bodies relative to each other (relative motion between the first and

second bodies is constituted by plastic deformation of seal **104** into irregularities in the surface finishes of housing **100** and shaft **102**; Figures 2, 10 and 10A, column 6 lines 15-34, column 6 line 50-column 7 line 7).

As to claim 2, Julien et al. disclose a system wherein the operating temperature is capable of being within 40°C above the martensite-austenite transition temperature (column 6 line 50-column 7 line 7).

Applicant is reminded that **process limitations are given little patentable weight in product claims** since the patentability determination of product-by-process claims is based on the product itself, even though such claims are limited and defined by the process. See MPEP § 2113. "The patentability of a product does not depend on its method of production. " In re Thorpe, 777 F.2d 695,698,USPQ 964,966 (Fed.Cir.1985). Accordingly, the process limitations of the operating temperature being within 40°C above the martensite-austenite transition temperature has little patentable weight; all that is required of claim 2 is a system wherein the operating temperature is capable of being within 40°C above the martensite-austenite transition temperature.

As to claim 3, Julien et al. disclose a system wherein the operating temperature is capable of being between room temperature and 300°C (column 6 line 50-column 7 line 7).

Applicant is reminded that **process limitations are given little patentable weight in product claims** since the patentability determination of product-by-process claims is based on the product itself, even though such claims are limited and defined by the process. See MPEP § 2113. "The patentability of a product does not depend on

its method of production. " In re Thorpe, 777 F.2d 695,698,USPQ 964,966 (Fed.Cir.1985). Accordingly, the process limitations of the operating temperature being between room temperature and 300°C has little patentable weight; all that is required of claim 3 is a system wherein the operating temperature is capable of being between room temperature and 300°C.

As to claim 4, Julien et al. disclose a system wherein the engagement surface of the first body **104** is non-planar (Figure 10A).

As to claim 5, Julien et al. disclose a system wherein the engagement surface **104** surrounds the indenter body **102** (Figure 10A).

As to claim 6, Julien et al. disclose a system wherein the indenter body **100** surrounds the engagement surface **104** (Figure 10A).

As to claim 7, Julien et al. disclose a system wherein the indenter body **102** is a gear (shaft **102** comprises a mechanism that performs a specific function in a complete machine; thus shaft **102** constitutes a gear; column 6 lines 15-34).

As to claim 8, Julien et al. disclose a system wherein the engagement mechanism comprises a linear motor (the engagement mechanism is constituted by axial relative movement between shaft **102** and housing **100**. Clearly, the engagement mechanism comprises a power unit to impart such linear or axial motion; such power unit constitutes a linear motor; column 6 lines 15-34).

As to claim 9, Julien et al. disclose a system wherein the engagement mechanism comprises a clamping apparatus for clamping the first and second bodies **104,100,102** together (axial relative movement between shaft **102** and housing **100**

causes rings **104** to deform, clamping the shaft and housing together; Figure 10A, column 6 lines 15-34).

As to claim 10, Julien et al. disclose a method for engaging and disengaging two bodies, the method comprising:

providing a first body **104** comprising an engagement surface, the engagement surface comprising a pseudo-elastic material, the pseudo-elastic material being at an operating temperature, the operating temperature being above the martensite-austenite transition temperature for the pseudo-elastic material, the pseudo-elastic material being capable of conversion from an austenite state to a martensite state by application of stress to the first body at the engagement surface, the application of stress to the engagement surface thereby converting the first body from an unloaded body to a loaded body wherein the engagement surface of the unloaded body that is in the austenite state has an unstressed shape and the engagement surface of the loaded body that is in the martensite state has a stressed shape wherein the stressed shape is different from the unstressed shape;

providing a second body **100,102** comprising an indenter surface for contacting the engagement surface of the first body, the indenter surface being formed by one or more teeth that extend from the second body for engagement with the first body to provide the stress to change the engagement surface of pseudo-elastic material from the austenite state to the martensite state (teeth are constituted by irregularities in the surface finishes of housing **100** and shaft **102**; Figure 2, column 6 lines 28-34), the

second body comprising a material that is harder than the pseudo-elastic material in the martensite state;

providing an engagement mechanism (an engagement mechanism is constituted by axial relative movement between shaft **102** and housing **100**; Figure 10A, column 6 lines 15-34) for contacting the indenter surface with the engagement surface to apply sufficient stress to the engagement surface to convert at least a portion of the pseudo-elastic material from the austenite state to the martensite sate due to a stress-induced martensite-austenite transition while the operating temperature is above the martensite-austenite transition temperature; and

removing the indenter surface from contact with the engagement surface to thereby provide return of the pseudo-elastic material to the austenite state;

wherein a load is transferred between the first and second bodies while in operation through contact of the indenter surface of the second body with the engagement surface of the first body to cause a change of motion of at least one of the first and second bodies relative to each other (relative motion between the first and second bodies is constituted by plastic deformation of seal **104** into irregularities in the surface finishes of housing **100** and shaft **102**; Figures 2, 10 and 10A, column 6 lines 15-34, column 6 line 50-column 7 line 7).

As to claim 11, Julien et al. disclose a method that includes the additional steps of:

moving the first and second bodies relative to each other after the step of removing the indenter surface **100,102** from contact with the engagement surface **104** to thereby provide repositioned first and second bodies; and

contacting the indenter surface with the engagement surface of the repositioned first and second bodies to apply sufficient stress to the engagement surface to convert the engagement surface of the repositioned bodies from the unstressed shape to the stressed shape wherein the stressed shape conforms to the shape of the indenter teeth (Figures 10 and 10A, column 6 lines 15-34, column 6 line 50-column 7 line 7).

As to claim 14, Julien et al. disclose a method wherein the engagement surface of the first body **104** is non-planar (Figure 10A).

As to claim 15, Julien et al. disclose a method wherein the engagement surface **104** surrounds the indenter body **102** (Figure 10A).

As to claim 16, Julien et al. disclose a method wherein the indenter body **100** surrounds the engagement surface **104** (Figure 10A).

As to claim 17, Julien et al. disclose a method wherein the indenter body **102** is a gear (shaft **102** comprises a mechanism that performs a specific function in a complete machine; thus shaft **102** constitutes a gear; column 6 lines 15-34).

As to claim 18, Julien et al. disclose a method wherein the engagement mechanism comprises a linear motor (the engagement mechanism is constituted by axial relative movement between shaft **102** and housing **100**. Clearly, the engagement mechanism comprises a power unit to impart such linear or axial motion; such power unit constitutes a linear motor; column 6 lines 15-34).

As to claim 19, Julien et al. disclose a method wherein the engagement mechanism comprises a clamping apparatus for clamping the first and second bodies **104,100,102** together (axial relative movement between shaft **102** and housing **100** causes rings **104** to deform, clamping the shaft and housing together; Figure 10A, column 6 lines 15-34).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 12 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over in view of Julien et al.

As to claim 12, Julien et al. fail to disclose a method wherein the operating temperature is within 40°C above the martensite-austenite transition temperature. Julien et al. do not disclose any functional significance as to the specific operating temperature, other than that ring **104** reliably fully functions above the martensite-austenite transition temperature with a maximum temperature of 1000°C (column 6 line 50-column 7 line 7). Accordingly, It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the method disclosed by Julien et al. wherein the operating temperature is within 40°C above the martensite-austenite transition temperature as it would be expected that one of ordinary skill in the art would routinely experiment to arrive at the optimum operational conditions for a

given application, and as such change in temperature would yield expected and predictable results, as ring **104** is reliably fully functional above the martensite-austenite transition temperature with a maximum temperature of 1000°C.

As to claim 13, Julien et al. fail to disclose a method wherein the operating temperature is between room temperature and 300°C. Julien et al. do not disclose any functional significance as to the specific operating temperature, other than that ring **104** reliably fully functions above the martensite-austenite transition temperature with a maximum temperature of 1000°C (column 6 line 50-column 7 line 7).

Accordingly, It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the method disclosed by Julien et al. wherein the operating temperature is between room temperature and 300°C as it would be expected that one of ordinary skill in the art would routinely experiment to arrive at the optimum operational conditions for a given application, and as such change in temperature would yield expected and predictable results, as ring **104** is reliably fully functional above the martensite-austenite transition temperature with a maximum temperature of 1000°C.

Response to Arguments

8. Applicant's arguments filed September 16, 2008 have been fully considered but they are not persuasive.

As to the rejection of claims 1 and 10 under 35 USC 112 2nd paragraph in regards to the limitations of the engagement mechanism providing reversible contact of the indenter surface with the engagement, Attorney argues that such claim language is

clear since the specification describes numerous examples of engagement mechanisms.

Examiner disagrees. It is unclear as to what structural elements constitute an engagement mechanism, and as to what causes such conversion or whether such conversion is a separate process from the stress-induced martensite-austenite transition, as claims 1 and 10 fail to positively claim any limitations which clearly define such features.

As to claims 1 and 10, Attorney argues that:

> Julien et al. do not disclose a system *wherein a load is transferred between the first and second bodies while in operation through contact of the indenter surface of the second body with the engagement surface of the first body to cause a change of motion of at least one of the first and second bodies relative to each other.*

Examiner disagrees. As to claims 1 and 10, Julien et al. disclose a system wherein a load is transferred between the first and second bodies while in operation through contact of the indenter surface of the second body **100,102** with the engagement surface of the first body **104** to cause a change of motion of at least one of the first and second bodies relative to each other (relative motion between the first and second bodies is constituted by plastic deformation of seal **104** into irregularities in the surface finishes of housing **100** and shaft **102**; Figures 2, 10 and 10A, column 6 lines 15-34, column 6 line 50-column 7 line 7).

Conclusion

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael P. Ferguson whose telephone number is (571)272-7081. The examiner can normally be reached on M-F (6:30am-3:00pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Daniel P. Stodola can be reached on (571)272-7087. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

MPF
11/07/08

/Michael P. Ferguson/
Primary Examiner, Art Unit 3679